the said adjustable air bellows spring in a space beginning immediately to the rear of the said steering axle and going approximately one-half of the distance to the rear spring shackle; wherein said adjustable air bellow spring means is connected to an air supply means through a manually adjustable pressure adjustment means which may be adjusted by the truck driver in the truck cab to supply the desired air pressure to said adjustable air bellows spring means in any manner desired by the truck driver.

17. A truck type motor vehicle of claim 16 wherein the air pressure supplied to said air bellows spring means has a pressure in the range up to about 100 pounds per square inch gauge.

REMARKS

This amendment is submitted as a response to the first Office Action dated November 23, 1992. Reconsideration of the application and claims is requested.

Numerous amendments have been made in the specification to correct typographical mistakes as pointed out by the Examiner.

Amendments or changes in the drawings have been made concerning numeral "39" as suggested by the Examiner. Also the term "adjustable pivot point" as objected to in claim 7 has been cancelled.

Submitted herewith for the Examiner's consideration is a photo enlargement of Figures 8 and 9 which shows sleeve 54, eye bolt 56, nut 57 and cable 58 more clearly.

While not considered necessary to clearly illustrate or explain the invention as claimed, Applicant would not object to another figure such as shown in the enlargement.

An enlargement of Figure 1 is also enclosed which shows the adjustment which can be made at the "adjustable pivot point" or "fifth-wheel" of most tractor-trailer type vehicles. Again this feature is not the essence of Applicant's invention and illustration of this feature is not considered necessary for Applicant's invention or to teach one skilled in the art how to use the invention. The enlargement is submitted for the Examiner's consideration.

Applicant requests that the requirement of formal drawings or correction of the drawings be held in abeyance until allowable subject matter is indicated.

Applicant gratefully acknowledges the telephone interview of January 26, 1993. Applicant believes the corrections and changes suggested by the Examiner have been effected in this Amendment and the distinguishing features of Applicant's invention as claimed clearly pointed out herein.

Claims 1-7 have been cancelled and new claims 8 through 17 substituted therefor. It is believed that the new claims overcome the problems of claim structure and more clearly point out and particularly claim the apparatus Applicant regards as his invention. The new claims approximately correspond to the previously pending claims and no additional fee is required.

The main features of the claims are set forth in the specifications on pages 5-8 and 13 through 19.

It is believed that the new claims clearly distinguish Applicant's invention over the prior art.

Applicant agrees with the Examiner that the references incorporated on pages 3 and 4 of the specification do not show or suggest Applicant's invention. It is submitted that the references are not any more relevant to the question of obviousness than the references cited in the Office Action. Applicant has amended the specification at this point to make it clear that the references are incorporated to teach one skilled in the art how to make and use Applicant's invention. It is noted that several of the references cited by the Examiner incorporate references as a method of teaching those skilled in the art.

Applicant had submitted herewith another copy of the Declaration form executed by the Inventor including the Applicant's zip code as suggested by the Examiner. The Applicant's zip code is included in the original application papers in the Verified Statement Claiming Small Entity Status.

It is believed that the claims as amended comply with the Examiner's requirements as to form and clearly distinguish over the prior art.

The first reference cited listed as "A" was U.S. Patent 4,919,399 to Selzer et. al.

Reference A describes a brake torque reaction beam as the "necessary" element of the invention beginning at Col. 2, line 34 through Col. 3, line 52. In Figures 1 and 4 Selzer purports to show the reaction beam with an air bag mounted on top of a vehicle axle.

Figure 4 even purports to show the front axle of a truck using a leaf spring assembly with the front of the leaf spring secured by some type of slip joint bracket. In contrast Figures 2 and 3 illustrate a conventional leaf spring having fixed pivot joints at the front and back. No air bag is shown with the conventional leaf springs and reaction beam of Figures 2 and 3. See also Col. 4, lines 58-63. Selzer shows that the air bag must be mounted on the axle and in an outboard position on the truck frame using an out-rigger type top bracket at numeral 30.

It is submitted that Selzer teaches that the reaction beam is necessary to obtain any advantage described and that the air bag merely serves to maintain the frame clearance constant; see Col. 4, lines 47-57. These teachings are consistent with other references cited such as Harbers, but are inconsistent with Applicant's invention as claimed.

Applicant claims and shows that an air bellows spring mounted on conventional leaf springs, on top of the leaf spring and under the frame at a particular place, that is, behind the steering axle and mounted in a particular manner can produce significant improvement in the steering characteristics of a truck steering axle.

Selzer does not even mention problems with truck steering, but merely suggests one assembly having an essential reaction beam for counteracting brake torque. It is submitted that Selzer either alone or in combination does not teach any method or apparatus for improving steering characteristics of a truck. There certainly is no teaching for any reason or any method to combine any feature of Selzer with any features from any of the other references cited.

The second reference, reference B, U.S. Patent 3,063,732 to Harbers et. al. shows the use of air bellows in place of the fixed pivot support on the front end of leaf springs used on the tandem axles of a trailer. A constant level air valve assembly is shown such as that described by Selzer. Harbers shows the air bellows rigidly mounted to the floating front end of the leaf spring using a bolt 84 and nut 86 through a hole 80 in the spring leaf.

The rear end of the leaf spring is clamped in a rigid bracket. Neither the apparatus shown by Selzer or Harbers would be satisfactory for pivotable fixed mounting of a conventional leaf spring assembly used with the steering axle of a truck. A floating leaf spring would not provide sufficient lateral stability for carrying the steering forces from the axle to the truck.

Harbers does not describe any type of bracket such as described and claimed by Applicant.

Harbers uses the term bracket to describe pieces of angle iron at 88 and 106 which are welded and rigidly fixed to the leaf spring and frame at the extreme front end of the leaf spring. The apparatus of Harbers does not teach any method or apparatus for improving the steering characteristics of the front axle of a truck or of any type of vehicle.

The third reference, reference C, U. S. Patent 3,285,281 to Pribonic et. al. shows and describes a vehicle with air adjustable shocks mounted to the lower rear spring and axle bracket. The top of the air shock is mounted to the vehicle body well inboard of the lower end of the shock and axle bracket. The air shock is used as an auxiliary unit to lift the rear of the vehicle when excess weight is carried by the vehicle. Pribonic does not describe any method of improving the steering characteristics of the front steering axle. The mounting method shown by Pribonic is contrary to the systems taught by Selzer and Harbers. The mounting method of Pribonic would cause a torque about the horizontal axis of the leaf springs which would cause problems with a steering axle rather than reduce steering problems.

Pribonic does show a pressure adjustment valve which could be used with several of the air bag systems cited and incorporated in the application. The air pressure valve, however, does not show or suggest Applicant's invention.

The fourth reference, reference, D, U. S. Patent Re. 23,704 to DeLay shows an adjustable fifth wheel assembly.

This could be a conventional fifth wheel assembly but it does not show or suggest Applicant's invention and no relationship to the other references is apparent. There is no teaching of any reason or method for combining the apparatus of DeLay with any other apparatus.

The fifth reference, reference E, is U. S. Patent 3,133,745 to Granning. Granning shows a method of adding an extra axle to the rear of a trailer to increase the load carrying capacity. The added axle uses air bellows type springs which are rigidly welded onto the added axle. Granning teaches nothing related to using an air spring in conjunction with a conventional spring or with a front steering axle. In fact, the apparatus of Granning would have no advantage on a front steering axle using a leaf spring since it shows the air springs welded directly to the axle and shows that additional brackets are necessary to secure such an assembly.

None of the references show Applicant's simple method of using air bellows spring to improve the steering characteristics of the front axle of a truck by mounting the air spring on top of the leaf spring at a particular place and in a particular manner. The Examiner is requested to keep in mind that the test of obviousness is applied using the level of knowledge and expertise of "one skilled in the art" and not the higher level of knowledge and expertise of a Patent Office Examiner; See In re Katzschmann, 146USPQ66(1965).

Applicant believes these features as claimed clearly distinguish his invention over the art and accordingly request allowance of the claims.

Respectfully Submitted,

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